Trauma Care for the Worst Case Scenario

Gunner Morgan

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for the
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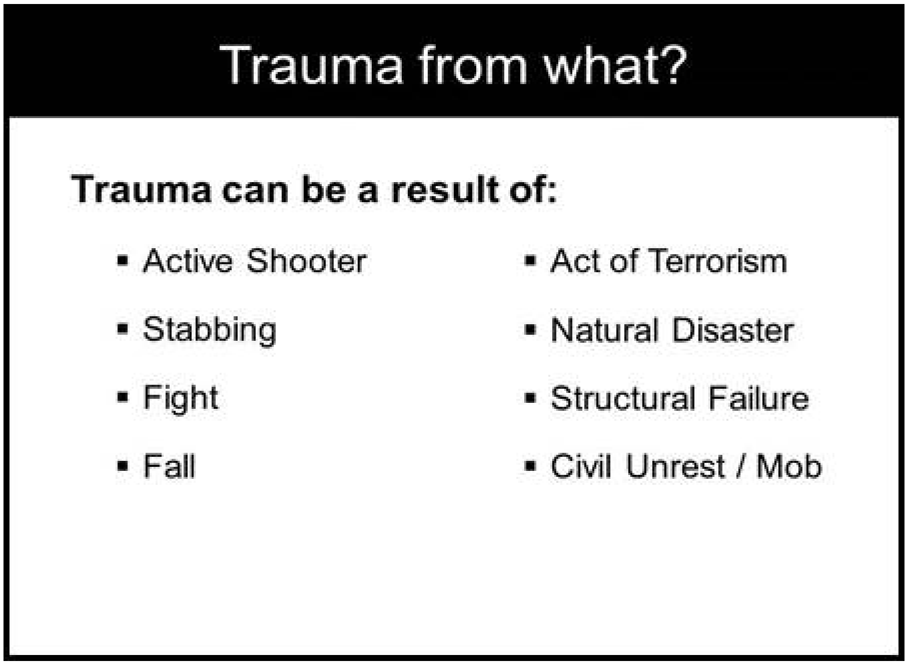
Introduction

We live in a world where bad things happen to good people. Oftentimes such events happen with little or no warning. From acts of violence to accidents our lives can be forever changed in the blink of an eye. Your ability to assess and treat traumatic injuries in a timely manner may be the difference between life and death or loss of a limb. As a society we have become overly reliant on first responders to help us and transport us to treatment. We assume that we can always call 9-1-1 and help is on the way. This may work the majority of the time but what if there is a major incident and help is not on the way or the phone lines are so tied up that your call won't go through or phone service is completely down. During the events of September 11, 2001 and the Boston Marathon bombing phone service was overwhelmed and not reliable. Or, you may be on a remote trip where there is no cellular phone service and help is miles away. It is imperative that you receive some medical training to deal with situations where help is not coming or is delayed. Without such training you will feel completely helpless or even responsible for not being able to provide help when a loved one, friend, or complete stranger is looking to you for help. That is a terrible feeling to have and it is one that you do not need to experience. There are so many types of medical training classes available these days that there literally is no excuse not to have some training.



Trauma from what?

Trauma can be a result of:

- Active Shooter
- Stabbing
- Fight
- Fall
- Act of Terrorism
- Natural Disaster
- Structural Failure
- Civil Unrest / Mob

The focus of this book is going to be dealing with traumatic injuries and not medical conditions such as a heart attack, stroke, diabetes, anaphylaxis due to bites or stings, or other conditions. While medical conditions are important to understand and have the ability to treat they will not be our priority with this book.

Instead we are going to look at treatment of severe life-threatening bleeding and treatment of an open chest wound. Because some injuries are the result of violent encounters, tactical priorities will also be addressed using a military model applied to civilians.

This book is targeted for law enforcement officers, military personnel, preppers, correctional officers, detention officers, probation & parole officers, and others who want to know what medical gear to carry for treating the worst case scenario. When “time is of the essence” you must be ready to respond.

Options for Medical Training

Many organizations and schools offer basic through advanced medical training. Oftentimes these training classes are taught at times that are convenient to even the busiest schedule. You can take classes during the evening and on weekends. You can even take some basic classes online from the comfort of your home. Regardless of where you obtain your medical training it is imperative that you train and practice your skills on a regular basis and under stressful condition. Medical training much like self-defense and firearms skills are perishable meaning that you will lose the skill if you do not practice on a regular basis. You want to be confident enough in your ability that you could treat a person any time and any place at a moment's notice. Remember, most emergencies happen at the blink of an eye and you may not get advanced notice of an impending situation. Your ability to perform well is directly correlated to your knowledge, skills, abilities, and experience. Another option is to volunteer with a local fire department or do ride-alongs to get some experience.

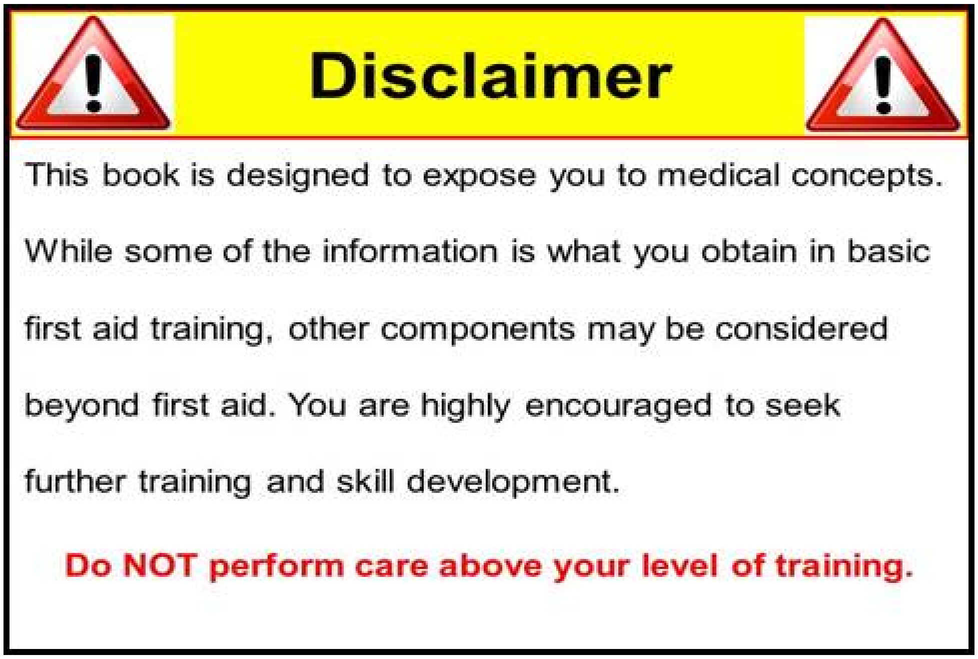
Training options include:

- Basic First Aid along with CPR, CCR, and AED
- Community Emergency Response Team (CERT)
- Wilderness First Aid
- Emergency Medical Technician (EMT)
- Paramedic
- Specialty classes to enhance skills

Basic first aid classes are often free or very inexpensive and do not require a lot of time. Every CERT class that I am aware of is free through your local fire department. Emergency Medical Technician classes can be completed in as little as 10 weeks or one semester at a community college. EMT is the minimum level of training that I recommend as it will provide you with a solid level of basic emergency care. Paramedic training is much more comprehensive and requires a commitment to the training. Some agencies will pay for your training as well. There are a lot of options available that will greatly enhance your ability to help those in need.

There are also specialty classes that can incorporate specific medical training on topics such as extrication, search and rescue, technical rescue, etc. Before you consider such classes it is best to master the basics. Take the necessary time to learn the basics so that you can use them under less than ideal circumstances when under stress. You must also have the ability to treat yourself if seriously injured. This may require that you develop a mindset that you will never give up. Can you imagine having to put a tourniquet on your upper arm due to an amputation in a motor vehicle accident? Or maybe you need to apply a tourniquet to your wife who was accidently shot in the femoral artery. You need the ability to block out the emotions of the situation and take care of priorities. This requires realistic training.

Having the skill to perform self-aid or buddy-aid is critical. You cannot assume, even when working in an urban environment, that medical care will be able to reach your location to provide aid. In an active shooter incident law enforcement officers will move past you to hunt down the shooter. Fire department and medical personnel, who have the ability to provide lifesaving care, will be required to stage some distance away from the scene. You may be in a situation where you are being held down by gunfire which prohibits first responders from getting to you. Or, you may be the subject of a hostage/barricaded situation where you have sustained potentially life threatening injuries. Again, never assume that first responders will be capable of helping you. It is incumbent upon you to be able to provide self-aid or buddy-aid until a higher level of care will be able to provide medical assistance or until you can reach a hospital.



Disclaimer

This book is designed to expose you to medical concepts. While some of the information is what you obtain in basic first aid training, other components may be considered beyond first aid. You are highly encouraged to seek further training and skill development.

Do NOT perform care above your level of training.

It cannot be stressed enough that you should never provide medical care above your level of training otherwise you may be opening yourself up to liability and potentially criminal charges.

In life or death situations you may have to make serious decisions in a timely manner. It is incumbent upon you to be prepared for the potential consequences of your decisions. Quality training can help you know which decisions are correct and what type of medical care to provide. The bottom line is that you need to receive training from a credible source.

Prevention

Before we move on to the meat of this book let's talk a little about prevention. The ultimate goal is that you never have to use your medical training. While this is the goal it may also be considered wishful thinking. Realistically, there are many things that you can do to avoid traumatic injury.

Following are suggestions that I recommend:

- If you are engaging in a dangerous event wear appropriate protection such as a helmet and pads.
- If you ride a motorcycle wear a helmet. I used to work as an emergency medical technician and I never responded to a motorcycle accident with minor injuries. All of them resulted in severe facial and head injuries. Some of the injuries result in death while others suffered lifelong injury such as paralysis and/or brain damage. These injuries could have been prevented with a helmet.
- Always wear a seatbelt and make sure that it is properly applied. Too many people keep their seatbelt too loose which limits the amount of protection it can provide.
- When around firearms always follow appropriate safety procedures and gun safety rules.
- Avoid dangerous locations when possible.
- When possible don't interject yourself into a potentially dangerous situation.
- Maintain situational awareness at all times when you are out of the safety and comfort of your home. Know who is around you, where exits are located, and be aware of what is occurring.
- Avoid illegal drug use. You would be amazed at the stupid things people do while under the influence of drugs.
- Avoid alcohol in excess. Again, like drugs, people tend to do stupid things and place themselves in dangerous situations when under the influence of alcohol.
- Never drive under the influence of alcohol, drugs, and certain prescription medications.
- Use your brain and think before you act. There are so many videos on the internet of people doing dangerous stunts that result in severe injury.

You cannot avoid all bad things from happening but take some responsibility for the things that you can avoid. People who engage in unsafe activities can expect something to eventually go wrong especially if you fail to take the activity seriously, do not follow practice safety procedures and choose not to use utilize safety equipment.

Trauma Care

Medical care continues to improve and is constantly changing to keep up with advancements in medical research, practice, and experience. Many medical improvements, especially relating to trauma, come directly from the military and are then assimilated into civilian medical care. The wars in Iraq and Afghanistan have provided a lot of new information relating to the treatment of traumatic injuries.

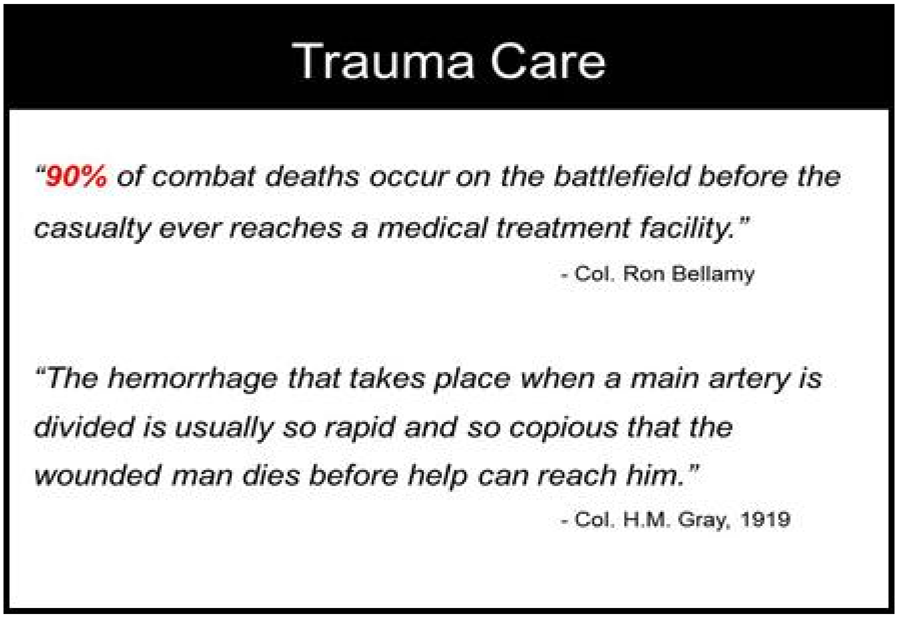
The provided information is NOT a substitute for receiving hands on training from a reliable source.

You must have the ability to perform self-aid when working alone and buddy-aid when with another person.

Based in data from the military preventable causes of combat death include[i]:

61%	**Hemorrhage from extremity wounds**
33%	**Tension pneumothorax**
6%	**Airway obstruction**

Considering that 61% of preventable deaths are from ***extremity wound hemorrhaging*** it shows that a main priority is to control severe bleeding effectively and early especially when help may be delayed. This is a skill that you must have the ability to perform.



Trauma Care

"90% of combat deaths occur on the battlefield before the casualty ever reaches a medical treatment facility."

- Col. Ron Bellamy

"The hemorrhage that takes place when a main artery is divided is usually so rapid and so copious that the wounded man dies before help can reach him."

- Col. H.M. Gray, 1919

A ***tension pneumothorax*** is life threatening condition where air progressively builds up in the chest cavity typically due to a lung laceration such as from a gunshot wound or from being stabbed in the chest. Air pressure collapses the lung and pushes it on the heart. The heart becomes compressed and is not able to pump blood well which can lead to death if not treated. The treatment consists of a needle thoracostomy, also known as a needle decompression, which can be done in the field but is above the skill level of most individuals. A tension pneumothorax can be minimized or prevented by treating an open “sucking” chest wound with the use of an occlusive dressing. This is a skill that you can apply. An open chest wound can be caused by the chest wall being penetrated by a bullet, knife, or other object. When a person with an open chest wound breathes, air goes in and out of the wound and may cause a "sucking" sound. Due to the distinct sound an open chest wound is often called a "sucking chest wound."

The ability to rapidly and effectively treat severe bleeding from an extremity wound and an open chest wound can increase survival rates by a significant amount. Considering this information, it is important that you carry a first aid kit so that they have the ability to treat such wounds. Oftentimes such a first aid kit is referred to as an Individual First Aid Kit (IFAK). Contents of an IFAK will be discussed later.

The use of tourniquets has been controversial in civilian pre-hospital care settings but has been the recommended management for all life threatening hemorrhage by the military. The benefits of tourniquet use over other methods include:

- In a situation where you have an active threat that is attempting to kill you it will be difficult to apply direct pressure and compression especially if you are trying to move to a safer location or behind cover. Remember, you are still being engaged from an active threat.
- Tourniquets can be applied by yourself (self-aid) thereby reducing the chance of someone else getting injured as they attempt to get to your location.
- There are few complications with tourniquet use relating to ischemic (lack of blood supply) damage especially if in place for less than two hours.

Tactical Combat Casualty Care (TCCC)

The military uses a concept called Tactical Combat Casualty Care (TCCC) which defines medical and combat priorities on the battlefield. Utilizing TCCC principles emphasizes extremity hemorrhage control over airway management when there is still an active threat which is called Care Under Fire. Tourniquet application to control life threatening extremity hemorrhage is the only procedure used while there is an active threat. Your priorities in a Care Under Fire incident are:

- Stopping the threat from firing at you which is most effectively accomplished if you are armed with a firearm
- Moving to a position of safety behind appropriate cover
- Treating severe lift-threatening bleeding

In a Care Under Fire incident you are in the "hot zone" and must maintain your situational awareness to know where the threat is at all times. Do what you can to stop the threat from injuring you which is accomplished much more easily if you are armed. If you are not armed you are at a significant disadvantage when faced with an armed assailant because you are limited in your response options. Regardless of whether you are armed or not it is important to scan the environment for cover. Scanning will also aid in avoiding tunnel vision so that you do not get overly focused or "missile locked" on obtaining cover to the point that you lose sight of the threat. In the absence of cover your best tactic is to keep moving as it is much more difficult to hit a dynamic moving target as opposed to a static target.

Contrary to popular misconceptions people who receive non-lethal penetrating wounds are often not incapacitated. If you are injured while under fire you should attempt to remain engaged, take cover, provide self-aid to control sever hemorrhage and re-engage to stop the threat. If you are injured to the point that you cannot move you may need to "play" dead and possibly the threat will move on. Playing dead may be your last option in the absence of cover and without the ability to move. When safe to do so you must address severe bleeding. The following box illustrates a common saying often used in TCCC:

Good medicine can sometimes be bad tactics;
Bad tactics can get everyone killed.
Doing the right thing at the right time is critical;
Doing the wrong thing at the wrong time can get you killed.

Your ability to provide pre-hospital care may be the most important factor in determining your survival or the survival of a loved one. Some incidents may require that you make both medical and tactical decisions very fast especially if a perpetrator is attempting to kill you. There is no "time-out" just because you or a loved receives an injury. The lifesaving tactics discussed in this book will not turn you into a special operations paramedic but will give you the skills to provide time critical treatment. Your goal is to perform self-aid or buddy-aid to keep alive long enough to reach the hospital for more advanced medical care. It is bad enough have a perpetrator shoot at you or attack you with a knife but this experience rapidly progresses from bad to worse if you become injured. In this situation you must maintain the mindset to never give up. Being shot, stabbed, or wounded does not mean that you are helpless, out of the fight, or dead.

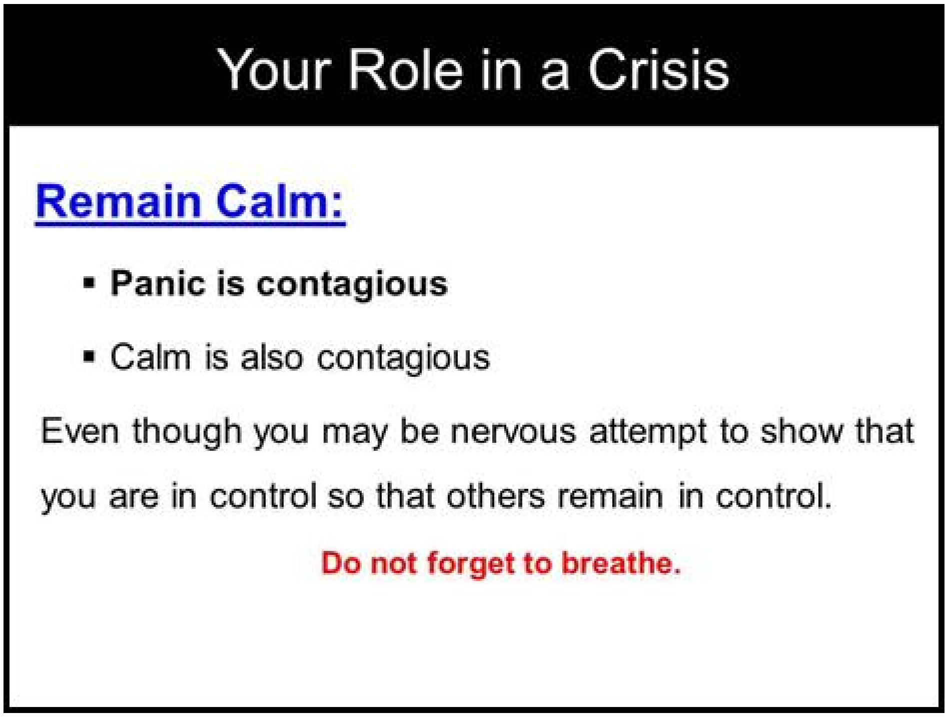
Do not lie down and die. Never give up.

Not all situations will be violent encounters. Yet, if you are engaged in a violent encounter such as an active shooter situation you will require the use of additional tactics especially when there is still an active threat attempting to hurt you. If you are injured in a vehicle accident, fall, natural disaster, or other event these tactics would not apply and you can focus on providing appropriate care to the wounded.

Basic Plan for Tactical Field Care

Tactical Field Care is care rendered by yourself or another once you are no longer in the line of fire and there is not an active threat. This is the time when you can conduct an appropriate assessment and more thoroughly treat injuries based upon your skill level and medical gear that you have on your person. Keep in mind that the military has combat medics available to provide aid during combat and some law enforcement agencies have tactical emergency medical services (TEMS) personnel assigned to SWAT units. You will not have this type of medical backup readily available. The medical equipment you have will consist of the first aid kit you carry or whatever you are able to improvise based on your clothing or what is available in the immediate environment. For example, if you do not have a commercially made tourniquet you may have to improvise one from a belt or other item of clothing. Death from exsanguination (severe blood loss) due to an extremity injury is preventable but requires quick, decisive, and effective action to stop the bleeding. It would be a travesty to lose a life because someone bled to death due to a severe extremity wound. Your goal at this stage is to stay alive by treating life-threatening injuries until paramedic units arrive and can transport you and/or your partner to an appropriate medical facility. If you are in a remote area that requires a long travel time by ground ambulance to a hospital first responders should immediately put an air ambulance helicopter on standby. If your injuries are non-life threatening the helicopter can always be cancelled.

Being shot or severely injured will cause your body to have both psychological and physiological responses that can negatively impact your ability to respond to the situation. It is critical that you maintain focus to control these responses so that you can cognitively process what actions to take to keep yourself or loved one alive. This is especially true in a care under fire incident. Remember to breathe and not hold your breath during periods of extreme stress. The last thing you want to do is hold your breath or hyperventilate and then pass out.



Your Role in a Crisis

Remain Calm:

- **Panic is contagious**
- Calm is also contagious

Even though you may be nervous attempt to show that you are in control so that others remain in control.

Do not forget to breathe.

Tactical Field Care

In a Tactical Field Care situation you are no longer under effective hostile fire. You now have the opportunity to perform appropriate care based on your training. ***Keep in mind that the situation can change and you end up back in a Care Under Fire situation.*** Because events can change it is important to maintain situational awareness of your environment.

Following are guidelines from TCCC modified for civilians:

1. If the person you are treating has an altered mental status and is armed with a firearm you should disarm this person immediately.

   An altered mental status can be the result of shock, hypoxia, or brain injury. Individuals with an altered mental status may lose the ability to cognitively process information and become incapable of using proper judgment about threats. This can be a deadly safety hazard. This person should be immediately disarmed and their weapons rendered safe.

2. Airway Management – Airway intervention does not need to be addressed if the person is conscious and breathing well on her own.

   a. Unconscious without airway obstruction:
      -Chin lift or jaw thrust maneuver
      -Nasopharyngeal airway (NPA) - generally well tolerated if consciousness is regained. **Training should be received prior to using a NPA.**
      -Place in recovery position
   b. Casualty with airway obstruction or impending airway obstruction:
      -Chin lift or jaw thrust maneuver
      -Nasopharyngeal airway
      -Allow casualty to assume any position that best protects the airway, to include sitting up
      -Place unconscious casualty in recovery position

   Utilization of the recovery position helps a semiconscious or unconscious person breathe and permits fluids such as blood, mucous, or vomit to drain from the nose and throat so they are not breathed in. This position should not be used if there is a back or neck injury.

   To place someone in the recovery position:

- Roll the person on their side with their arms and upper leg at right angles to the body to support them
- Tuck their upper hand under the side of their head so that their head is on the back of the hand
- Open their airway by tilting the head back and lifting the chin
- Monitor their breathing and pulse continuously

For both situations a. and b. listed above you would benefit to receive training on the proper procedure to insert a nasopharyngeal airway which is a tube designed to be inserted into the nasal passageway to secure an open airway. As in a Care Under Fire incident, cervical spine immobilization is generally not required for penetrating injuries and assumes a lower priority than caring for massive hemorrhage or airway obstruction. Cervical spine immobilization should be considered for blunt trauma injuries. If the previous airway management techniques are not effective then the casualty will need treatment from a responder trained with a higher level of care and who can perform an intubation or cricothyroidotomy. Intubation is the placement of a flexible plastic tube into the trachea (windpipe) to maintain an open airway so that the patient can be properly ventilated. A cricothyroidotomy is an emergency surgical procedure in which a hole is cut through a membrane in the patient's neck into the windpipe in order to allow air into the lungs. **Such techniques should never be attempted by untrained individuals.**

3. Breathing

   1. Treat all open “sucking” chest wounds (open pneumothorax) with an occlusive dressing and secure it in place.

   2. If a tension pneumothorax develops the person will need a needle chest decompression performed by a paramedic or other medical provider. A tension pneumothorax is a life threatening development that is preventable if higher level medical care can get to the person in a timely manner.

4. Bleeding

   1. Use a tourniquet to control life threatening hemorrhage that is amenable to tourniquet application.

2. For hemorrhaging that is not amenable to tourniquet application use a hemostatic agent such as QuikClot Combat Gauze applied with direct pressure for a minimum of three minutes. A hemostatic agent is a substance that stops bleeding. The most common forms of hemostatic agents used in a field setting are dressing, powder, and granules.

3. Control other significant bleeding that has not previously been addressed.

Individual First Aid Kit (IFAK)

Police officers carry a firearm because the need may arise when they will have to use their weapon against a violent offender. They wear body armor just in case they are shot. Everyone should wear seat belts in case they are in an automobile accident. Motorcyclists should wear a helmet every time they ride. We should all take precautions to minimize the risks of bad things that may occur. The point being that bad things can and do happen to good people. And whether they are statistically relevant or not we should take precautions for those times when you just might become the statistic. Carrying an Individual First Aid Kit (IFAK) is one of those items you hope to never have to use but should the need occur the kit can literally save your life, a loved one, or a complete stranger in need.

An Individual First Aid Kit (IFAK) is designed to enable you to treat potentially life-threatening traumatic injuries typically associated with gunshot, stab, or blast injuries.

There are literally dozens of commercially available IFAK's on the market that go by a variety of different names such as: Individual Patrol Officer Kit (IPOK^{TM}), Patrol Trauma Pak, Operator IFAK, Basic Life Support Tactical Operator Response Kit (BLS TORK^{TM}), Advanced Patrol Officer's Trauma Kit, Patrol Officer's Pocket Trauma Kit, Police Academy Personal Trauma Kit, Tactical First Response Kit, etc. The list goes on and there are many choices to choose from when it comes to your medical kit. Some are good quality while others are lacking. When it comes to your IFAK I cannot stress enough the importance of only carrying quality components. Remember, the kit you carry may save your life one day so don't skimp. Before we discuss IFAK components lets discuss what an IFAK is not.

An IFAK is not a “boo-boo” kit designed to treat minor injuries such as cuts, scrapes, blisters, hang nails, sore muscles, or a bloody nose. It is not a place for an assortment of Band-Aids or over the counter medications for pain, allergies, cramps, or headaches. If you are required to take prescription medication throughout the day or as needed those medications would not be included in your IFAK. While the items mentioned do not belong in your IFAK you should have a separate kit to keep such items that will probably be utilized with some regularity. This separate kit can be kept in your work desk, gear bag, or vehicle. Your IFAK is reserved specifically for the treatment of life-threatening injuries.

IFAK Considerations

Choosing an IFAK is an important decision because the time that you need to use the kit will be under the "***worst case scenario***" when someone's life is at risk. You will be nervous, your heart will be pounding, you may breathe faster, your hands may shake, and you might feel like you need to use the restroom. To make matters worse is that 'time is of the essence' when treating a life-threatening injury such as a severe hemorrhage. Having a quality kit along with the knowledge of how to use each component will give you piece of mind should you ever need to treat yourself or another person.

When choosing an IFAK you can buy one that is a commercially available pre-made IFAK or you can purchase items individually and create a kit to your own specifications.

Following are some considerations when choosing or building an IFAK:

Cost:	Basic kits can be very inexpensive but tend to lack needed items. Comprehensive kits will cost more and provide higher quality components.
Quality & Effectiveness	There are many companies that make products that can be placed in an IFAK but not all are equally effective. I recommend only using the highest quality most effective items. For example, there is no sense in having a tourniquet that is small and compact yet will not stop a major hemorrhage.
Size	The more comprehensive your IFAK the larger it will be. Smaller kits tend to lack important components. You will need to find a balance that fits your needs. Sometimes this is easier said than done.
Portability	Whatever IFAK you choose you must commit to carrying it with you at all times as it serves you no good if it is not with you.

Maintenance	Any items that are used will need to be immediately replaced. Some components may have expiration dates.
Training	It is important to train with each component of your kit so that you are completely familiar with its use and functionality. This may require that you purchase duplicate items so that you can train and become proficient with each component. Also, some items such as a Nasopharyngeal Airway (NPA) may require that you attend formal training or certification in its use.

As with many things in life you can easily come up with a laundry list of excuses not to carry an IFAK. Excuses such as: it is too big, too cumbersome, I will never need it, no one else carries one, it is too expensive, I will wait for paramedics, I hate the sight of blood, etc. Such excuses will fail to serve you well during a crisis. There is no better substitute for having a high quality IFAK during an emergency requiring immediate and effective treatment especially if advanced medical help is not coming. Ultimately you have to decide what components to put in your kit and must accept the consequences if you choose not to have a comprehensive IFAK or if you choose not to carry a kit at all.

IFAK Components

As previously stated there are many commercially available IFAK’s. Some are small and compact but lack necessary items such as a quality tourniquet, an occlusive dressing, or hemostatic agent. A comprehensive kit is larger and more expensive but will effectively treat major traumatic injuries from a gunshot wound or a severe cut from an edged weapon. At a minimum an IFAK must be able to effectively and quickly address severe hemorrhage to an extremity which is the leading causes of death. Below I will list items that I believe are important components. Do your own research and obtain items that fit your needs and your level of training.

Following are components that I believe should be an integral part of an IFAK:

Tourniquet

It is possible to bleed to death from an injury to a major artery such as the femoral artery in 3-5 minutes. A high quality tourniquet is essential. I recommend the following tourniquets:

1. Combat Application Tourniquet (C-A-T) [Primary choice]

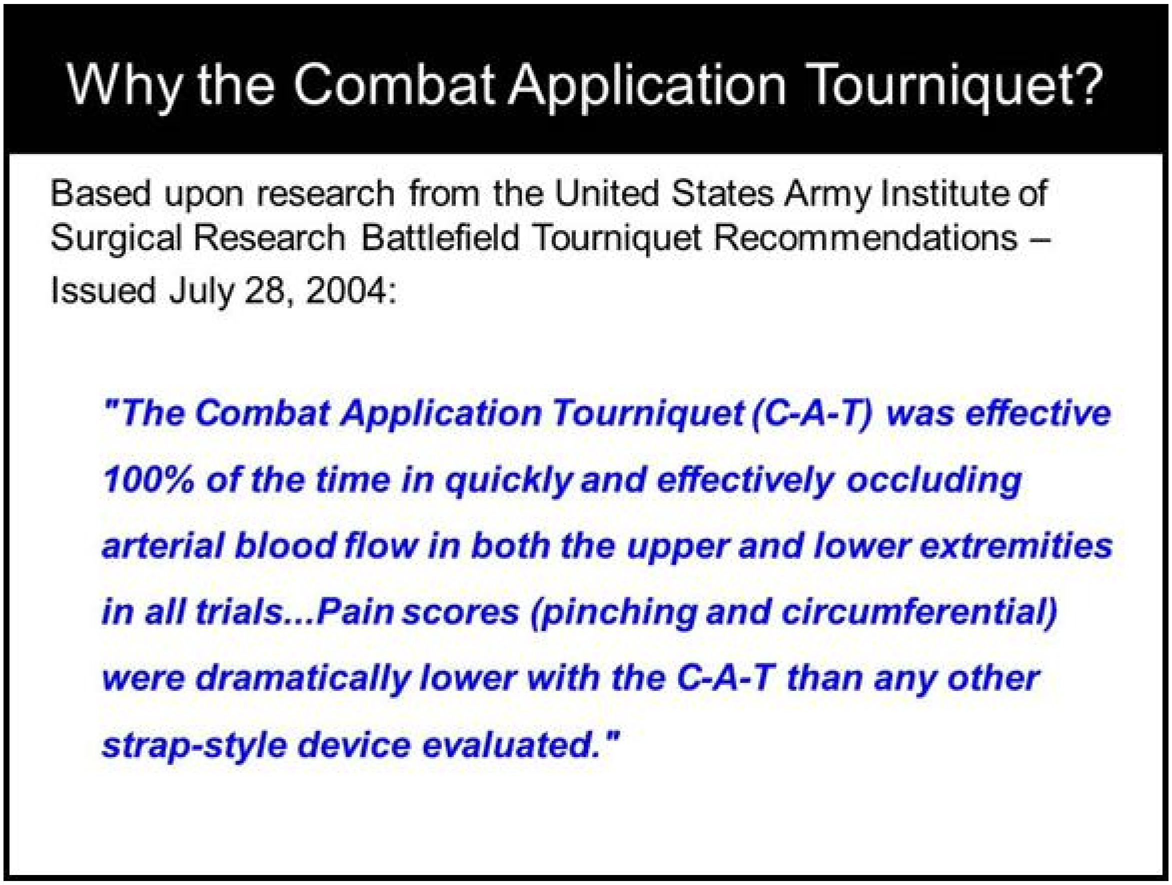
   Available on Amazon at: http://www.amazon.com/C-A-T-Combat-Application-Tourniquet-version/dp/B003IPZRYI/ref=sr_1_1?ie=UTF8&qid=1391542114&sr=8-1&keywords=Combat+Application+Tourniquet

2. SOF Tactical Tourniquet (SOFTT) [Secondary choice]

   Available on Amazon at: http://www.amazon.com/SOF-Tourniquet-BLACK-Generation-II/dp/B007AIJZO2/ref=sr_1_2?ie=UTF8&qid=1391542234&sr=8-2&keywords=2.+SOF+Tactical+Tourniquet

Too many times I hear people say they will improvise a tourniquet from a shirt, belt or other items. My question to them is: ***Do you want to improvise such an item under the worst possible conditions when someone's life is on the line?*** It is ridiculous to resort to improvising a tourniquet when so many quality ones are commercially available. There is no reason to make a bad situation more stressful when you can just by a quality tourniquet.

It is ridiculous to resort to improvising a tourniquet when so many quality ones are commercially available. There is no reason to make a bad situation more stressful when you can just by a quality tourniquet. You should still know how to improvise a tourniquet but doing so should be your last resort.



Why the Combat Application Tourniquet?

Based upon research from the United States Army Institute of Surgical Research Battlefield Tourniquet Recommendations – Issued July 28, 2004:

"The Combat Application Tourniquet (C-A-T) was effective 100% of the time in quickly and effectively occluding arterial blood flow in both the upper and lower extremities in all trials...Pain scores (pinching and circumferential) were dramatically lower with the C-A-T than any other strap-style device evaluated."

Hemostatic Agent

Hemostatic agents are used on bleeding that is not amenable to tourniquet application. There are many different types and brands of hemostatic agents currently available. New and more effective agents are currently being researched.

I recommend the following hemostatic agent:

1. QuikClot Combat Gauze [Primary choice]

   Available on Amazon at: http://www.amazon.com/QuickClot-Combat-Gauze-Z-Fold/dp/B001E1CLTC/ref=sr_1_1?ie=UTF8&qid=1391542321&sr=8-1&keywords=QuikClot+Combat+Gauze

Again, I hear a lot of people complain about hemostatic agents because they tend to be an expensive component and they have an expiration date. Your patient may also have an expiration date if you cannot stop the bleeding. A quality kit costs more for a reason. When my life or the life of a loved one is on the line I am willing to pay a little more to make sure that we have the best chance for survival. Spending $30-$50 on a quality hemostatic agent is much less expensive than losing a loved one who bleeds to death because I didn’t want to spend the money.

Many hemostatic agents will last for three years before they expire. If you use it one time it will be worth its weight in gold. If you never have to use it then that is even better.

Pressure Dressing

Pressure dressings must have the ability to actually exert pressure on the wound to assist with stopping the bleeding. They can also function as an improvised tourniquet, wrap, or sling to immobilize an appendage. I recommend the following pressure dressings:

1. Emergency Trauma Dressing, 4 or 6 inch by North American Rescue [Primary choice]

   4“ available on Amazon at: http://www.amazon.com/North-American-Rescue-Emergency-Dressing/dp/B003UNPZYK/ref=sr_1_1?ie=UTF8&qid=1391542402&sr=8-1&keywords=Emergency+Trauma+Dressing

   6“ available on Amazon at: http://www.amazon.com/Emergency-Dressing-North-American-Rescue/dp/B003UNRUR0/ref=sr_1_3?ie=UTF8&qid=1391542471&sr=8-3&keywords=Emergency+Trauma+Dressing

2. Israeli Bandage (Israeli Battle Dressing), 4 or 6 inch [Secondary choice]

   4“ available on Amazon at: http://www.amazon.com/4-Israeli-Battle-Dressing-Bandage/dp/B006PH1UWO/ref=sr_1_3?ie=UTF8&qid=1391542564&sr=8-3&keywords=Israeli+Bandage

   6“ available on Amazon at: http://www.amazon.com/Israeli-Bandage-Battle-Dressing-Compression/dp/B008YJJWRQ/ref=sr_1_4?ie=UTF8&qid=1391542564&sr=8-4&keywords=Israeli+Bandage

Pressure dressings are another item that people try to skimp on. They are under the false belief that a tampon will do the trick and replace the need for a pressure dressing and/or a hemostatic agent. No, tampons will NOT work with a severe arterial bleed and they are not a substitute for a pressure dressing or a hemostatic agent. Pressure dressings are not an expensive item so spend the money and get a few to have in your kit.

Chest Seal

Rapid treatment of an open pneumothorax (sucking chest wound) consists of forming a seal over the wound which will help the patient breathe easier.

I recommend the following chest seals:

1. Hyfin Vent Chest Seal [Primary choice]

   Available on Amazon at: http://www.amazon.com/HyFin-Chest-North-American-Rescue/dp/B006X5SFTY/ref=sr_1_1?ie=UTF8&qid=1392150189&sr=8-1&keywords=hyfin+chest+seal+vent

2. Asherman Chest Seal [Secondary choice]

   Available on Amazon at: http://www.amazon.com/Rusch-Teleflex-849100-Asherman-Chest/dp/B0015TE9N4/ref=sr_1_1?ie=UTF8&qid=1391542818&sr=8-1&keywords=Asherman+Chest+Seal

3. Bolin Chest Seal [Tertiary choice]

   Available on Amazon at: http://www.amazon.com/H-Associates-Bolin-Chest-Seal/dp/B003VSRO1Q/ref=sr_1_1?ie=UTF8&qid=1391542853&sr=8-1&keywords=Bolin+Chest+Seal

According to new research published in the Journal of Special Operations Medicine[ii]:

"All open and/or sucking chest wounds should be treated by immediately applying a vented chest seal to cover the defect. If a vented chest seal is not available, use a non-vented chest seal. Monitor the casualty for the potential development of a subsequent tension pneumothorax. If the casualty develops increasing hypoxia, respiratory distress, or hypotension and a tension pneumothorax is suspected, treat by burping or removing the dressing or by needle decompression."

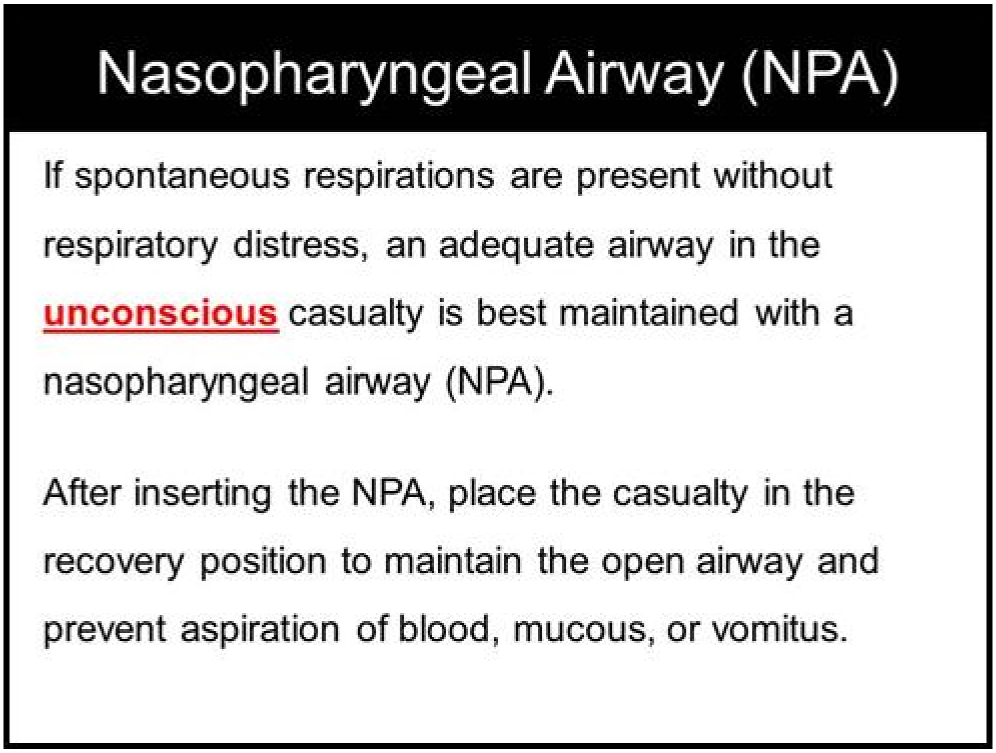
Nasopharyngeal Airway (NPA)

To be used on an unconscious or semi-conscious individual. Use of an NPA typically requires formal training and should not be used without such training.

I recommend the following NPA:

Nasopharyngeal Airway (28 Fr.) with Surgilube by Rusch [Primary choice]

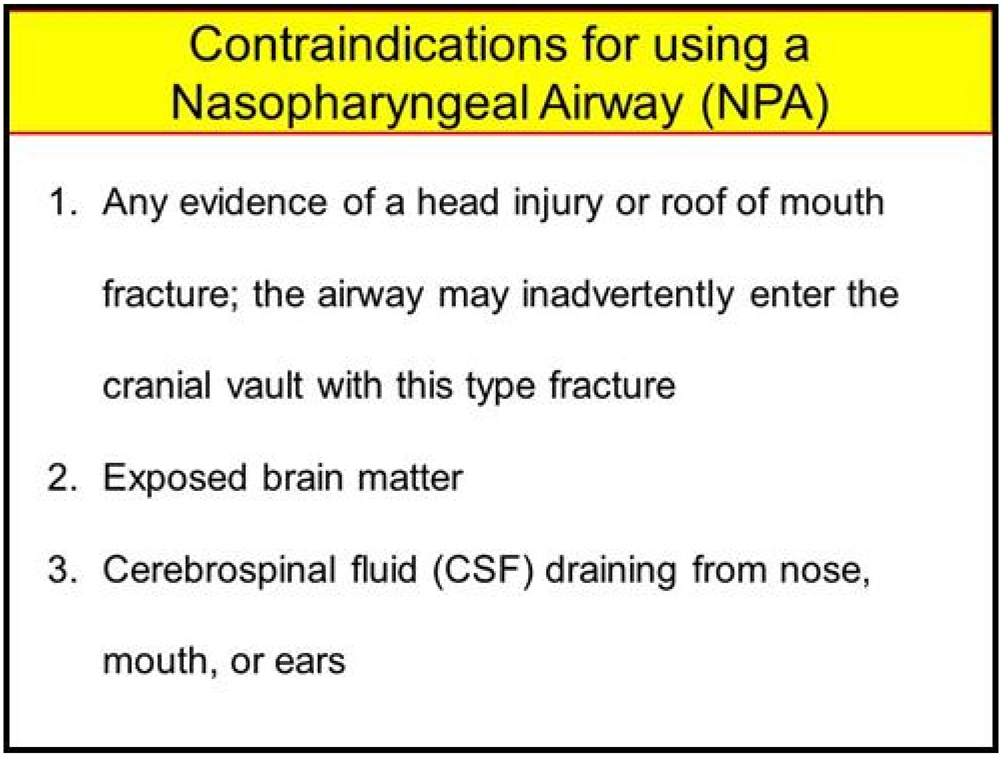
Available on Amazon at: http://www.amazon.com/Nasopharyngeal-28-Fr-9-3mm-Surgilube/dp/B003950R2E/ref=sr_1_15?ie=UTF8&qid=1391542564&sr=8-15&keywords=Israeli+Bandage



Nasopharyngeal Airway (NPA)

If spontaneous respirations are present without respiratory distress, an adequate airway in the **unconscious** casualty is best maintained with a nasopharyngeal airway (NPA).

After inserting the NPA, place the casualty in the recovery position to maintain the open airway and prevent aspiration of blood, mucous, or vomitus.



Contraindications for using a Nasopharyngeal Airway (NPA)

1. Any evidence of a head injury or roof of mouth fracture; the airway may inadvertently enter the cranial vault with this type fracture
2. Exposed brain matter
3. Cerebrospinal fluid (CSF) draining from nose, mouth, or ears

Gloves

Gloves are essential to provide protection from bloodborne pathogens such as hepatitis, HIV/AIDS, and others. Always wear gloves when working around all body fluids and keep in mind that there are other body fluids besides blood which can contain pathogens. Such body fluids can be: Peritoneal fluid, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, vomit/feces, saliva, amniotic fluid, vaginal secretions and semen. If you do not know what it is then consider it as other potentially infectious material and take appropriate precautions. There is no reason for you to become infected with a potentially life-threatening disease when providing care for others.

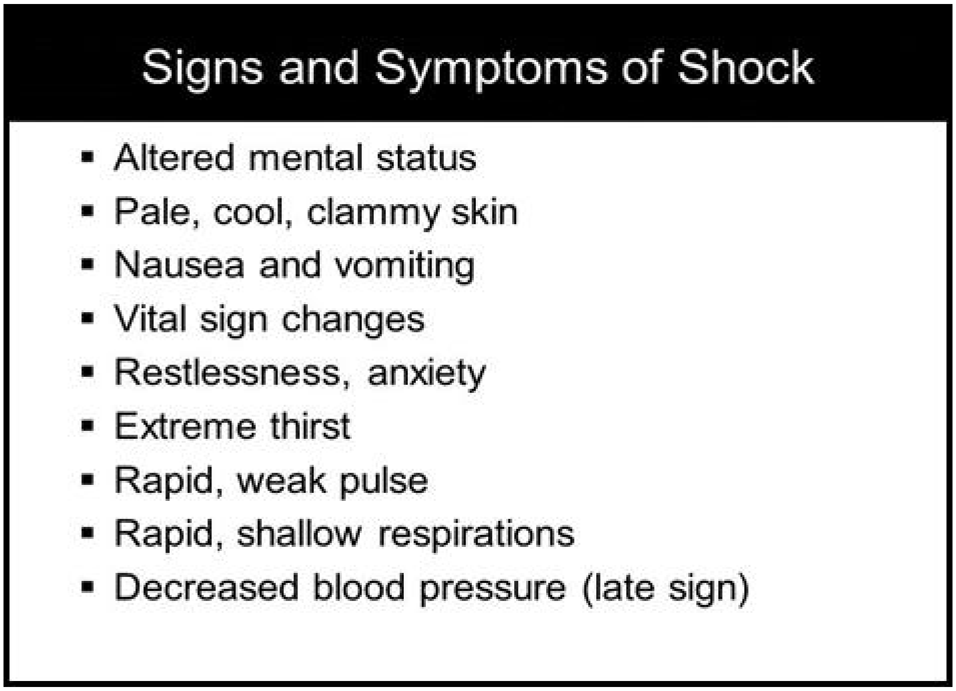
I recommend the following personal protective gloves:

> Black Talon Nitrile Gloves [Primary choice]
>
> Available on Amazon at: http://www.amazon.com/Gloves-Pairs-Black-Talon-Nitrile/dp/B0046DDU18/ref=sr_1_1?ie=UTF8&qid=1391544787&sr=8-1&keywords=Black+Talon+Nitrile+Gloves

I like the Black Talon Nitrile Gloves because they fit well, are durable, and still allow for tactile sensation. Regardless of which types of gloves that you use never expose them to heat for an extended period of time or the gloves will be more likely to tear.

Always carry more than one set of gloves should a glove rip or you need to treat multiple victims. Replace your gloves on an annual basis.

Always be on the lookout for shock which can rapidly deteriorate the patient's condition leading to death.



Signs and Symptoms of Shock

- Altered mental status
- Pale, cool, clammy skin
- Nausea and vomiting
- Vital sign changes
- Restlessness, anxiety
- Extreme thirst
- Rapid, weak pulse
- Rapid, shallow respirations
- Decreased blood pressure (late sign)

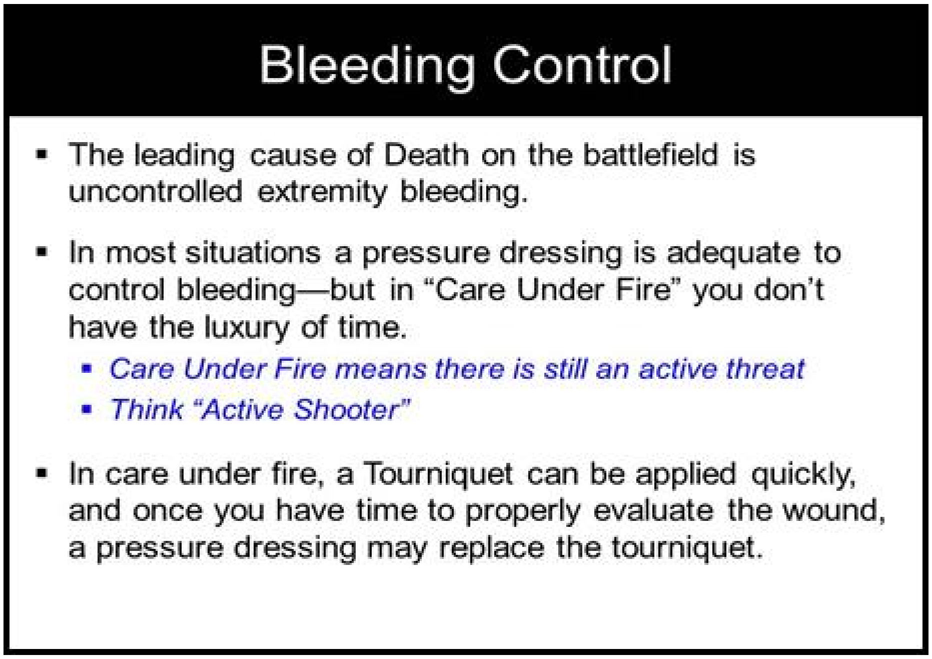
Keep in mind that the above list is subject to change based on new products that are developed or current products that are improved. It is important to conduct some research to find which components will suit your needs best and then train with your IFAK so that you are familiar with each item that you carry. You can also purchase a pre-made commercially available IFAK and modify it to your needs.

Medical Considerations for IFAK Components

Tourniquet

Recommended Tourniquet: Combat Application Tourniquet (C-A-T). The C-A-T is a one-handed windlass tourniquet that can completely occlude arterial blood flow in both an upper or lower extremity.

Tourniquets are used to control severe external hemorrhage from an extremity due to a traumatic injury such as a gunshot wound, knife wound, explosive device, or amputation. Major bleeding occurs when an artery is cut or damaged which can result in death within 3-5 minutes. Your ability to stop major arterial bleeding is critical even when working in an urban environment and emergency services are available and capable of providing aid in a relatively short period of time. Assuming that paramedics are able to treat you within 5-6 minutes still means that you may have lost a substantial amount of blood leaving you in critical condition. The average adult contains approximately 5 liters of blood so it is important to keep every precious drop of blood in your body. An arterial bleed is evidenced by bright red blood that spurts out while a venous bleed is dark in color and flows out but does not spurt. Arteries carry oxygenated blood throughout the body while veins carry deoxygenated blood back to the lungs to pick up oxygen. The major artery in the arm is the brachial artery and the major artery in the leg is the femoral artery.



Bleeding Control

- The leading cause of Death on the battlefield is uncontrolled extremity bleeding.
- In most situations a pressure dressing is adequate to control bleeding—but in “Care Under Fire” you don’t have the luxury of time.
  - *Care Under Fire means there is still an active threat*
  - *Think “Active Shooter”*
- In care under fire, a Tourniquet can be applied quickly, and once you have time to properly evaluate the wound, a pressure dressing may replace the tourniquet.

There was a time when utilization of a tourniquet was the last possible option which was highly discouraged and the belief was that the limb would be lost although a life would be saved. Much research has been done which clearly indicates that this is not the case and that tourniquets can be used in a safe manner over a prolonged period of time (6+ hours) without limb damage. There is a well-documented case of tourniquet application that was applied for 16 continuous hours without loss of the limb. According to a study on tourniquet use on combat casualties it states, "*Of tourniquets evaluated in this work, the CAT is the best prehospital tourniquet*…[iii]"

Remember that in a Care Under Fire situation you will only address severe extremity bleeding and that tourniquet application is your first choice of control for such life-threatening bleeding. Do not attempt direct pressure, pressure dressing, or any other type of hemorrhage control. Go directly to a tourniquet to control life-threatening bleeding. Survival rates are improved when tourniquets are applied before the patient goes into shock. Tourniquets should **not** be used for wounds with minor bleeding. Non-life-threatening bleeding should be ignored until the Tactical Field Care phase.

Tourniquets are to be applied approximately 2-3 inches above the wound and never placed directly on the wound. Tourniquets should not be placed directly over the knee or elbow. The tourniquet can be placed over clothing if necessary but it is best if clothing is removed. Do not place a tourniquet over a cargo pocket that contains bulky items. Once applied the distal pulse should be check to verify that the tourniquet is tight enough. If you still can feel a pulse then tighten the tourniquet more. A second tourniquet can be applied directly above the first tourniquet to control bleeding.

Common mistakes with tourniquet application include:

- Failure to apply a tourniquet when it is needed
- Waiting too long to apply the tourniquet
- Failure to tighten it enough to eliminate the distal pulse
- Utilizing a tourniquet for minimal bleeding that does not require a tourniquet
- Applying the tourniquet too high on the limb
- Removing the tourniquet prematurely (generally you will have a medical professional remove the tourniquet at a medical facility)

When utilizing a tourniquet pain and discomfort is to be expected. It is important to understand that pain and discomfort does not indicate that the tourniquet was incorrectly applied and it does not mean that it should be removed. Utilization of a tourniquet is necessary to save a life.

Tourniquet

- Attach notation to patient alerting other providers that a tourniquet has been applied.
  - **Write the time the tourniquet was applied.**

Hemostatic Agent

Recommended Hemostatic Agent is the QuikClot Combat Gauze. This product does not produce heat as some of the older hemostatic agents. QuikClot Combat Gauze is highly effective in stopping bleeding, is safe, has no known contraindications, and has a three year self-life. This product is simple and easy to use with the added benefit that the product instructions are written directly on the package. When using a hemostatic agent such as QuikClot Combat Gauze it is critical to apply direct pressure for a minimum of three minutes.

Pressure Dressing

Recommended Pressure Dressing is the Emergency Trauma Dressing (ETD), 4 or 6 inch by North American Rescue. The ETD is a sterile dressing used for applying direct pressure. The North American Rescue website has a video of proper use of this pressure dressing which is viewable at: http://www.narescue.com/portal.aspx?CN=3628A28F222B&BC=DAD06AB67C9C

Chest Seal

Recommended is the Hyfin Chest Vent Seal. This seal is a 6”x6” occlusive dressing used for the treatment of penetrating injuries to the chest. Treatment of an open “sucking” chest wound (open pneumothorax) consists of covering the wound during expiration (breathing out) with an occlusive dressing. An occlusive dressing should extend a minimum of two inches past the edge of the wound to provide the best seal possible. There are many commercially available products that have very functional adhesive properties to seal the wound. Following are some of the more popular chest seals on the market: Hyfin, Asherman, Bolin, and Halo. The wound should be sealed on all four sides and the patient should then be placed in a sitting position if there are no other injuries. Application of an occlusive dressing should improve the patients breathing. The patient should then be monitored for the development of a tension pneumothorax which can result in increasingly difficulty breathing. If a tension pneumothorax develops the injured patient will need a needle decompression which needs to be performed by a person with appropriate medical training.

If there is a knife in the chest or other part of the body do not remove it. Leave in in place and attempt to secure it with dressings so that the knife does not move and cause further injury.

The North American Rescue website has a video of proper use of this pressure dressing which is viewable at: http://www.narescue.com/Portal.aspx?CN=1BB57448570E

Nasopharyngeal Airway (NPA)

While insertion of a Nasopharyngeal Airway is not a difficult skill it is also best that you receive professional hands on training in its application. It is also important to know that there are some contraindications for using a NPA which will be covered in training.

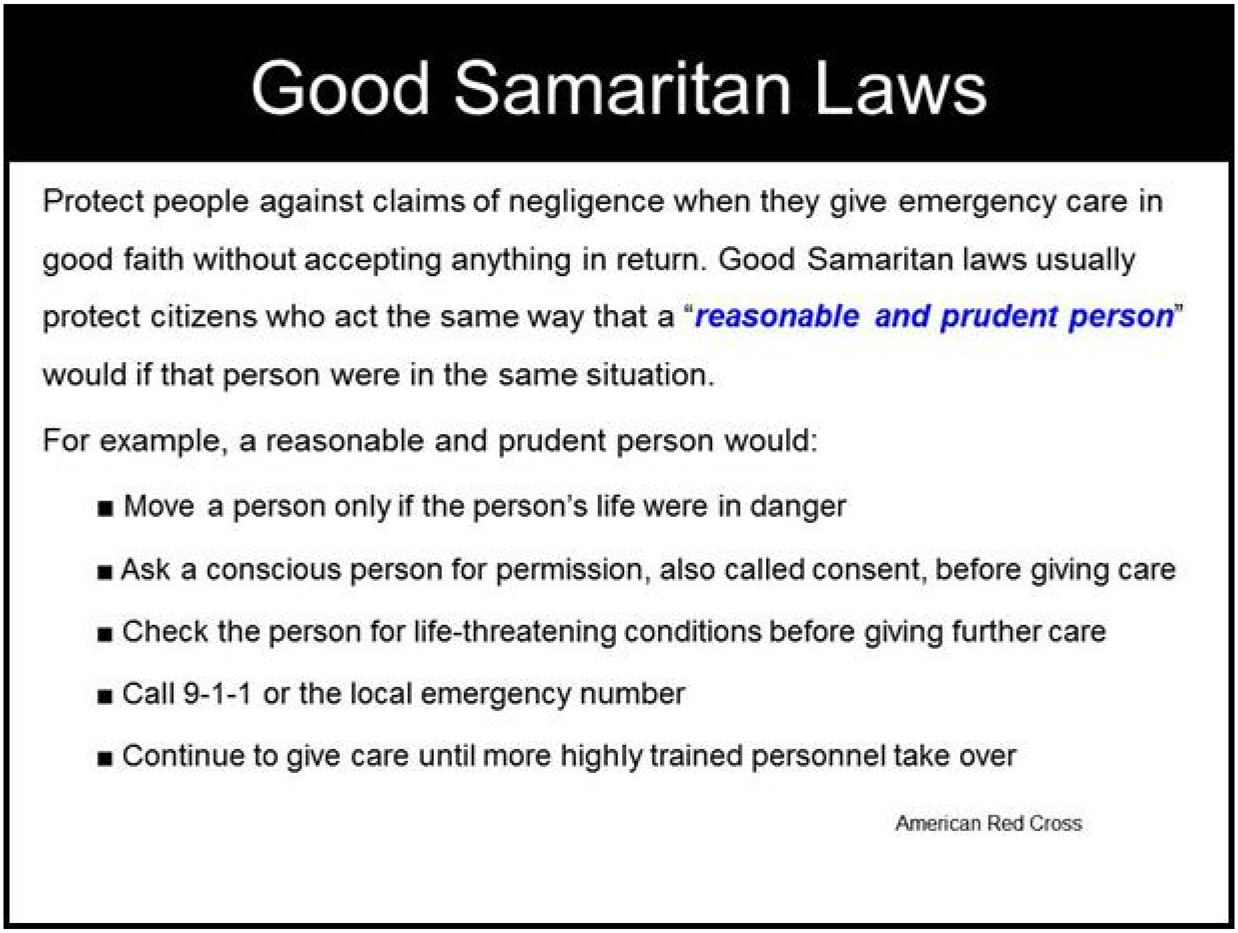
Summary

Training for the worst case scenario is a must. Individuals need the knowledge, skills, and abilities to know what to do in a crisis to save lives. A severe hemorrhage can lead to death within a matter of minutes. Your ability to provide self-care and buddy care for others may be what keeps you alive until a higher level of medical care can assist. Attend training that goes into more depth than basic first aid and CPR. Basic first aid training is really training geared toward the best case scenario while care under fire training is the training for the worst case scenario. You must not only have the skills to treat severe bleeding and chest wounds but you must also carry a quality Individual First Aid Kit on their person.

Practical Exercises

Following are a list of practical exercises to expose you to some of the concepts in this book. Each scenario can be modified in any way that meets your needs. The exercises are relatively basic and not every possible function is covered. These exercises should be performed under proper medical and tactical guidance. I cannot stress enough the importance of receiving proper medical training on first aid, CPR, CCR, AED, and use of a tourniquet, nasopharyngeal airway, chest seal, and hemostatic agents. Never perform medical care that is above your level of training as you are placing the patient in danger and can potentially be held liable for your actions.

Remember the mantra: **Do no harm.**



Good Samaritan Laws

Protect people against claims of negligence when they give emergency care in good faith without accepting anything in return. Good Samaritan laws usually protect citizens who act the same way that a "***reasonable and prudent person***" would if that person were in the same situation.

For example, a reasonable and prudent person would:

- Move a person only if the person's life were in danger
- Ask a conscious person for permission, also called consent, before giving care
- Check the person for life-threatening conditions before giving further care
- Call 9-1-1 or the local emergency number
- Continue to give care until more highly trained personnel take over

American Red Cross

Practical Exercise 1: Evaluation Sheet

Scenario:

In this scenario you and your wife are walking down a busy city street in a major metropolitan city.

As you are walking a young thug comes behind your wife and attempts to steal her purse by using a knife to cut the strap. Instead of cutting the strap he slashes your wife in her right bicep and it is now spurting bright red blood.

The offender runs away and is quickly out of sight and no longer a threat to your safety.

What action do you take?

Available Gear:

Tourniquet, pressure dressing, hemostatic agent, nasopharyngeal airway, chest seal, and nitrile gloves, cell phone

Performance Activities:

Directs someone to immediately call 9-1-1?
Performs an accurate patient assessment?
Does not cause further injury to the patient?
Rapidly identifies a brachial artery hemorrhage and utilizes a tourniquet?
Correctly applied tourniquet?
Tourniquet properly placed above wound?
Tourniquet applied until bleeding controlled?
Application time for applying tourniquet: _______________

Practical Exercise 2: Evaluation Sheet

Scenario:

In this scenario you and your family are driving down a remote freeway which is a minimum of 45 minutes from the nearest town.

You are driving at 70 miles per hour when a blowout occurs to your front tire causing your vehicle to violently swerve multiple times. Fortunately, you prevented the car from rolling over. You and your wife are uninjured but your 15 year old son hit is head on the back seat side window causing it to shatter. The result is a severe laceration to the side of his scalp with bright red blood spurting all over the place. He is conscious, alert, and oriented. He does not complain of any other injuries.

What action do you take?

Available Gear:

Tourniquet, pressure dressing, hemostatic agent, nasopharyngeal airway, chest seal, and nitrile gloves, cell phone

Performance Activities:

Directs someone to immediately call 9-1-1? (If you have cell service)
Performs an accurate patient assessment?
Does not cause further injury to the patient?
Rapidly identifies an artery hemorrhage and utilizes a hemostatic agent?
Correctly applied hemostatic agent?
Held appropriate pressure for three minutes?
Used a pressure dressing over the wound and applied it correctly?

Practical Exercise 3: Evaluation Sheet

Scenario:

It is Saturday evening and you are home with your family enjoying the weekend. You walk out to the front yard to put a hose away when a bomb explodes. You have been hit in the chest with a piece of sharp shrapnel. You immediately fall to the ground, grasp your chest, and are having difficulty breathing.

Your wife comes out of the house and you inform her you have a chest wound?

What actions should the wife take?

Available Gear:

Tourniquet, pressure dressing, hemostatic agent, nasopharyngeal airway, chest seal, and nitrile gloves, cell phone

Performance Activities:

Directs someone to immediately call 9-1-1?
Moves the husband to a safe location inside the house?
Performs an accurate patient assessment?
Does not cause further injury to the patient?
Rapidly identifies an open chest wound and utilizes a chest seal?
Correctly applies chest seal?
Positions the father either in a sitting position or on his side with the injured side next to the ground?
Treats for shock?

Resources

Following are resources that you can use to increase your knowledge. These resources are not a substitute for hands on training or certification.

American Medical Association Handbook of First Aid and Emergency Care

http://www.amazon.com/American-Medical-Association-Handbook-Emergency/dp/1400007127/ref=cm_cr_pr_pb_t

Prehospital Trauma Life Support by NAEMT and American College of Surgeons Committee on Trauma

http://www.amazon.com/Prehospital-Trauma-Life-Support-NAEMT/dp/0323065023/ref=sr_1_1?ie=UTF8&qid=1391547764&sr=8-1&keywords=prehospital+trauma+life+support

Tactical Medicine Essentials by American College of Emergency Physicians (ACEP)

http://www.amazon.com/Tactical-Medicine-Essentials-Emergency-Physicians-ebook/dp/B008ETD6RI/ref=sr_1_2?ie=UTF8&qid=1391547883&sr=8-2&keywords=tactical+emergency+medicine

68W Advanced Field Craft: Combat Medic Skills by United States Army

http://www.amazon.com/68W-Advanced-Field-Craft-Combat/dp/0763786594/ref=tmm_pap_title_0

Medicine for the Outdoors: The Essential Guide to Emergency Medical Procedures and First Aid by Paul S. Auerbach

http://www.amazon.com/Medicine-Outdoors-Essential-Medical-Emergency/dp/0323068138/ref=tmm_pap_title_0

The Survival Medicine Handbook: A guide for when help is NOT on the way by Joseph Alton and Amy Alton

http://www.amazon.com/The-Survival-Medicine-Handbook-Guide/dp/0988872536/ref=tmm_pap_title_0?ie=UTF8&qid=1391548446&sr=1-1

The Survival Doctor's Guide to Wounds: What to Do When There Is No Doctor by James Hubbard

http://www.amazon.com/The-Survival-Doctors-Guide-Wounds-ebook/dp/B008M2E4IM/ref=pd_sim_kstore_1

References

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[i] Bellamy RF. “The Causes of Death in Conventional Land Warfare: Implications for Combat Casualty Care Research.” Mil Med 1984

[ii] Butler, Frank. “Management of Open Pneumothorax in Tactical Combat Casualty Care: TCC Guidelines Change 13-02.” Journal of Special Operations Medicine Volume 13, Edition 3/Fall 2013

[iii] Kragh JF. “Practical Use of Emergency Tourniquets to Stop Bleeding in Major Limb Trauma.” The Journal of TRAUMA Injury, Infection, and Critical Care, February Supplement 2008

Final Note

If you found ***Trauma Care for the Worst Case Scenario*** beneficial please consider writing a positive review on Amazon so that others may benefit from this work.

Other Works by Gunner Morgan:

"Reality" in Reality Survival Shows

http://www.amazon.com/Reality-Survival-Shows-ebook/dp/B00HYNE23C/ref=sr_1_1?ie=UTF8&qid=1391551418&sr=8-1&keywords=gunner+morgan

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